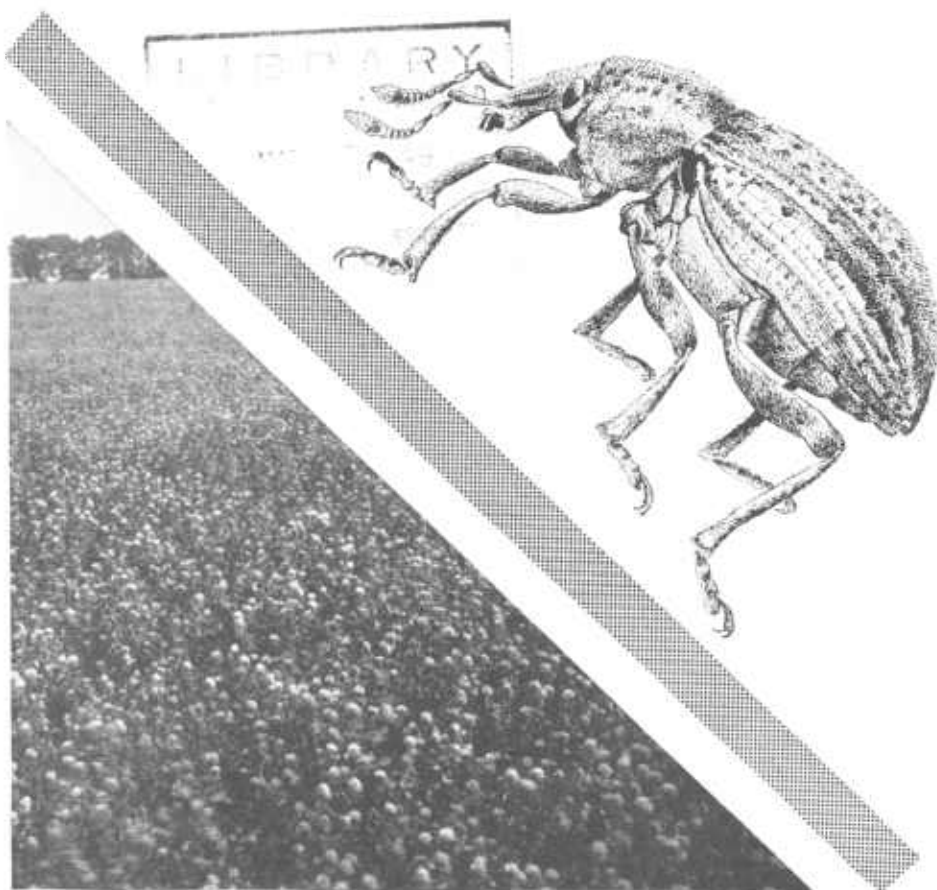


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# The **CLOVER LEAF WEEVIL** and its control



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**T**HE CLOVER LEAF WEEVIL is an important pest of clover. It causes severe injury to the clover crop before its inroads are checked by the fungus disease which usually controls it in the larval or grub stage.

This bulletin describes and illustrates the various stages of the insect, tells when and where these stages may be found, and gives methods of control.

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# THE CLOVER LEAF WEEVIL AND ITS CONTROL

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## Contents

	Page		Page
Nature of injury-----	1	Food plants-----	4
Distribution-----	1	Control -----	4
Description and life history-----	1		

## NATURE OF INJURY

**T**HE CLOVER LEAF WEEVIL<sup>2</sup> sometimes causes serious injury to clover and alfalfa. During April and May clover and alfalfa plants often have a ragged appearance caused by small holes in the leaves and later by irregular patches eaten from the margins. If careful search is made around the base of the plants, the greenish wormlike or larval stage of this weevil may be found. Rarely is a crop entirely lost, but considerable injury often may result, especially in backward seasons, before the larvae become full grown or are killed by an almost universally prevalent fungus disease to which they are susceptible.

## DISTRIBUTION

The clover leaf weevil occurs in Asia, is well known in Europe, and after having been accidentally introduced into this country is now well established in the United States wherever clover and alfalfa are commonly grown.

## DESCRIPTION AND LIFE HISTORY

The adult weevil (fig. 1) varies somewhat in size, averaging about one-fourth inch in length and one-eighth inch in width. It is covered with small brown, yellow, and gray scales, which give it a mottled appearance, and has a short but distinct snout.

The eggs are oval, about one twenty-fifth of an inch long and about half as wide. They are yellowish when first laid but darken with age and finally turn black. The beetles deposit their eggs in various places about the host plant—in cavities gnawed in fresh stems (fig. 2), in hollows of old stems, or on the leaves and stems of fresh plants. The eggs are usually laid during the fall of the year, but some of the weevils

<sup>1</sup> F. F. Dicke, entomologist, was chiefly responsible for the revision of this bulletin.

<sup>2</sup> *Hypera punctata* (F.), order Coleoptera, family Curculionidae.

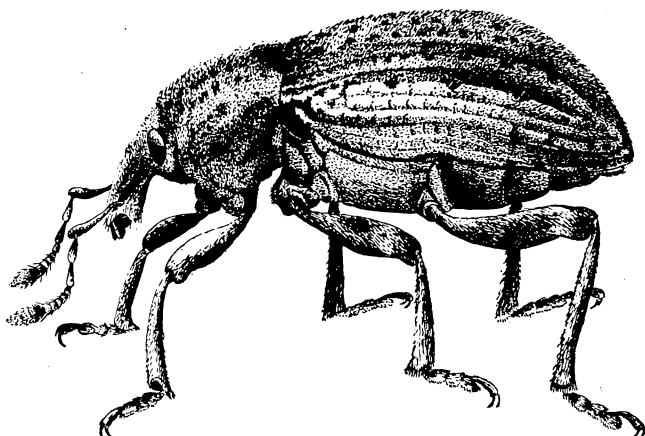


FIGURE 1.—Adult clover leaf weevil, side view. Much enlarged. (Tower and Fenton.)

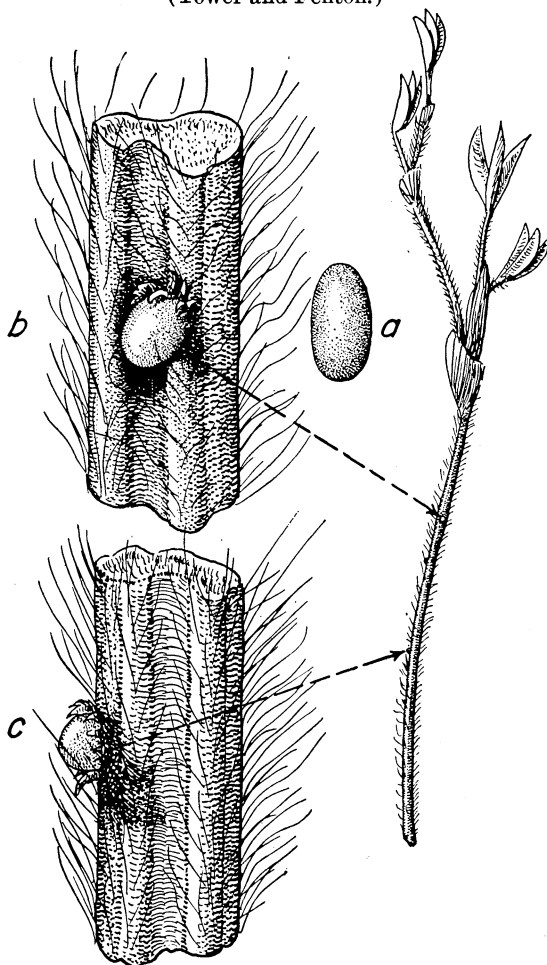


FIGURE 2.—Egg of the clover leaf weevil: *a*, Side view; *b*, egg inserted into stem of clover plant; *c*, side view of *b*. Much enlarged. (Tower and Fenton.)

live through the winter and may deposit eggs during mild periods in the winter or spring.

Most of the eggs hatch in the fall, although some remain through the winter. The small, green larvae begin feeding at once, eating the tender clover leaves, continuing their feeding on mild days

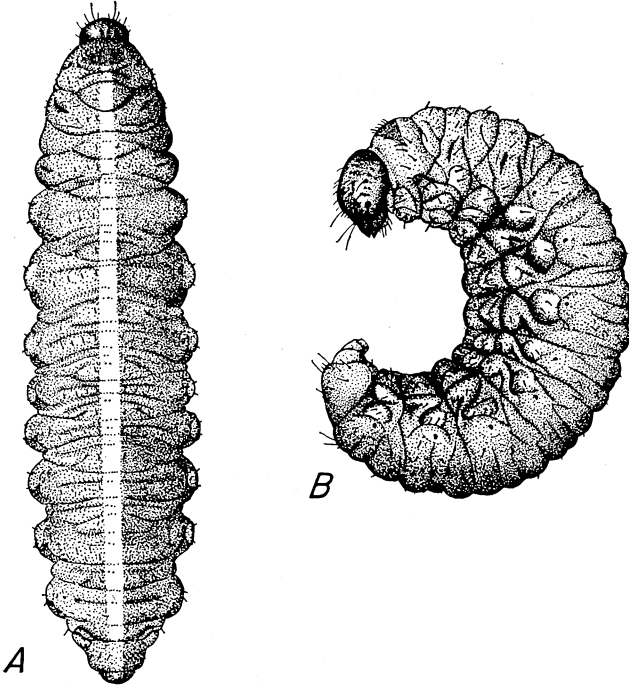


FIGURE 3.—Full-grown larva of the clover leaf weevil: A, Top view; B, side view. Much enlarged. (Tower and Fenton.)

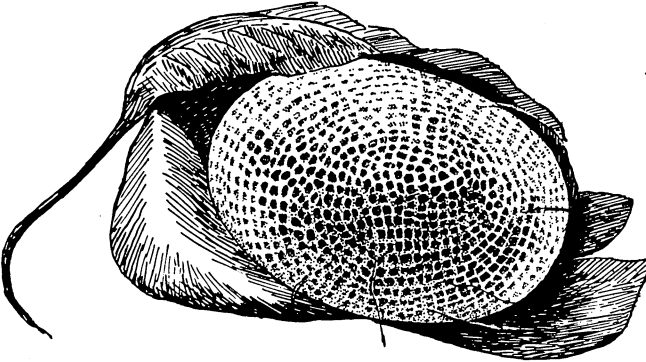


FIGURE 4.—Cocoon of the clover leaf weevil surrounded by leaves of clover plant. Enlarged. (Tower and Fenton.)

throughout the winter and early spring, and finally become full-grown about the latter part of April or May. The full-grown larvae (fig. 3) are from three-eighths to one-half inch long, usually green but sometimes yellowish, with a white or pinkish line down the center of the back.

When it is full-grown the larva spins an oval cocoon (fig. 4) just beneath the surface of the soil or in leaves or rubbish near the base of the plants. The cocoon is of a straw color, about three-eighths of an inch long by one-fourth of an inch wide. Within this cocoon the larva undergoes a short resting stage in a form known as the pupa. After about 11 days the adult beetle emerges from the cocoon, feeds for a short period, and then becomes more or less inactive for much of the summer, hiding away in rubbish.

There is usually only one generation, from egg to adult, in a year. Under exceptional weather conditions, however, a second generation may develop and produce weevils before cold weather arrives. These weevils live over the winter and lay their eggs the following spring. This generation may injure young clover and alfalfa in the fall.

### FOOD PLANTS

The clover leaf weevil prefers to feed on red clover, alfalfa, and white clover, but it will also eat other varieties of clover including alsike and occasionally sweetclover, and some varieties of beans. The weevils have also been known to feed on timothy, green wheat leaves, burdock, soybeans, various flowers, and even leaves of corn.

### CONTROL

A disease caused by a fungus<sup>3</sup> usually keeps this insect from becoming a serious pest on clover and alfalfa. This fungus is well distributed over the clover- and alfalfa-growing regions of the United States. Wherever seasonal temperatures, soil moisture, and fertility conditions are favorable for plant growth, widespread epidemics of this disease occur during periods of high humidity. Outbreaks of the disease have been observed every month from October to May, or practically throughout the feeding period of the larvae.

Diseased larvae crawl to the upper part of a plant and curl across the edges of the leaves or around the stems (fig. 5). Diseased larvae are usually found in such locations in the morning, whereas healthy larvae at this time of day are found in the litter at the base of the plants. By midday or early afternoon dead larvae can be found attached to the leaves and stems by the rootlike strands of fungus that issue from the under side of the larvae (fig. 6). Late in the afternoon and at night the larvae become covered with myriads of filaments at the ends of which are borne spores that are responsible for producing epidemics of this disease. These spores are scattered in a single night. When a larva is lying on a flat surface a whitish ring usually about one-fourth inch from the specimen is formed by the spores (fig. 7). The position of the diseased larvae on the upper part of the plant is favorable for spreading the disease organisms.

Even with favorable temperatures and with infected larvae present the spread of the disease is slow during clear dry weather. Under such conditions, and when clover and alfalfa are nearing the blossoming stage in the spring, the fungus has a tendency to develop resting spores in the body of the larvae. These spores apparently do not aid in the immediate spread of the fungus. Also, little disease has been found among larvae infesting clover growing on ground that previously bore a practically pure stand of grass for several years.

<sup>3</sup> *Empusa sphacerosperma* (Fres.) Thaxt.



FIGURE 5.—Larva of the clover leaf weevil killed by the fungus disease.

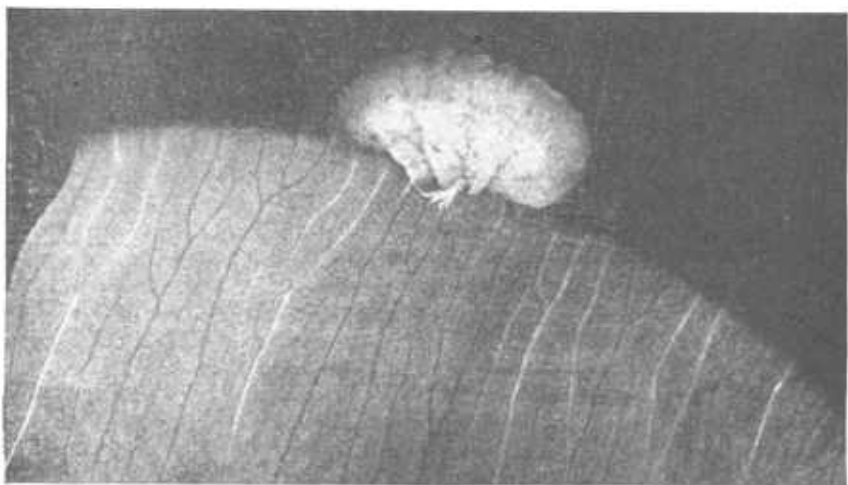


FIGURE 6.—Dead larva of clover leaf weevil attached to clover leaf, showing root-like strands of fungus that have issued from the under side of the larva.



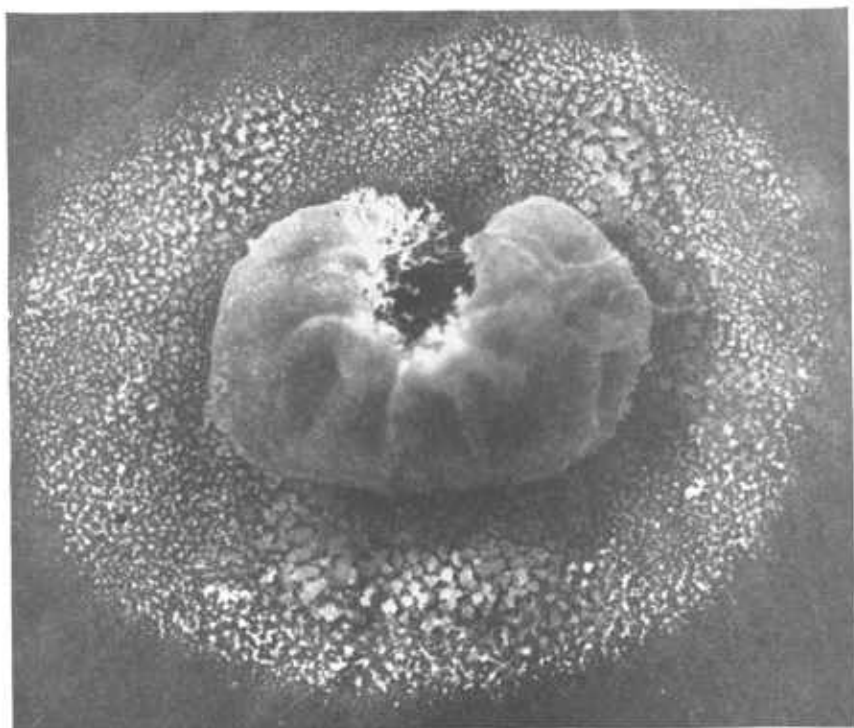


FIGURE 7.—Larva of clover leaf weevil killed by the fungus disease, showing whitish ring resulting from great numbers of spores thrown off by this fungus.

These observations indicate the importance of including clover or alfalfa with grass in order to maintain the fungus in the soil.

Since the fungus disease is the most effective method of keeping the clover leaf weevil under control, practices that will promote the development of the disease and at the same time are favorable for the production of clover or alfalfa should be adopted: (1) Maintain favorable fertility conditions to insure vigorous growth; (2) keep the humus content of the soil at a level favorable to the conservation of water; (3) use clover or alfalfa regularly with grass in the crop rotation in order to promote the development of the fungus.

Because of the effectiveness of the disease and the usual vigorous condition of the host plants in the spring of the year, it seldom is necessary or practical to apply direct control measures against the weevil. However, good control has been obtained even in the usual rainy spring weather by spraying the crop with lead arsenate. A spray containing 2 pounds of lead arsenate and 2 pounds of laundry soap to 100 gallons of water, applied as soon as injury is noticed at the rate of 100 gallons per acre, is recommended. In the fall, when the disease is less effective, there have been instances in the Southern States where young alfalfa plants have been practically stripped of leaves by the larvae of this pest. In such cases individual judgment must determine whether it is practical to spray for control.